# Prehistoric Water Utilization and Technology in Arizona

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fans (water-deposited rich soils at the mouth of washes) where over-the-bank flooding or runoff from rainfall would be expected to provide moisture for the plants. Such fields were planted and left unattended until it was time to come back and harvest what had been produced. As the importance and productivity of agriculture increased, people started spending more time tending crops. The fields were cleared of weeds and other plants that would compete with the crops for moisture. People returned to the fields several times over the growing season to make sure the crops were watered. Water was carried to the fields in watertight baskets or skin bags.

The time period between 500 B.C. and A.D. 1000 saw settled village life become well established in the eastern half of Arizona. The western deserts generally remained the domain of what was still a hunting-and-gathering lifeway, although the peoples of the Colorado River valley practiced some agriculture. In the eastern half of Arizona three major cultural traditions arose: the Hohokam, Prehistoric Puebloans (Anasazi), and Mogollon. These peoples came to live in permanent villages and towns, built pueblos, made an array of pottery, and depended primarily on agriculture to supply the bulk of the food they ate. In addition to these three cultures, western Arizona was the homeland of the Patayan, the central mountains in the vicinity of Flagstaff were the home of the Sinagua, and the south-central mountains were home to the Salado tradition.

## THE VILLAGE PEOPLE: THE PREHISTORIC PUEBLOANS, THE HOHOKAM, AND THE MOGOLLON

Although not the only prehistoric people in Arizona to use water control systems, the Prehistoric Puebloans, the Hohokam, and the Mogollon used an amazing variety of techniques to capture, manage, and move water. These techniques provided not only water and moisture for crops, they provided the domestic water needed to live in the varied arid environs of Arizona. Many of the techniques used were common to these three and other cultures in Arizona, across the Southwest, and in many parts of both the Old and New Worlds. Another thing these cultures have in common is that beginning in the mid to late A.D. 1300s, a series of prolonged droughts and shifts in rainfall patterns appears to have contributed significantly to their decline and eventual collapse. By the mid A.D. 1400s many of the areas they inhabited were abandoned to remnant populations that carried on reduced versions of their ancestors' lifeways. Descendants of these earlier peoples can be found in the Hopi villages in the mesa country of northern Arizona, and the Akimel O'odham and Tohono O'odham of the central and southern Arizona desert claim descent from the Hohokam. Thus, the early farmers are not gone or forgotten.

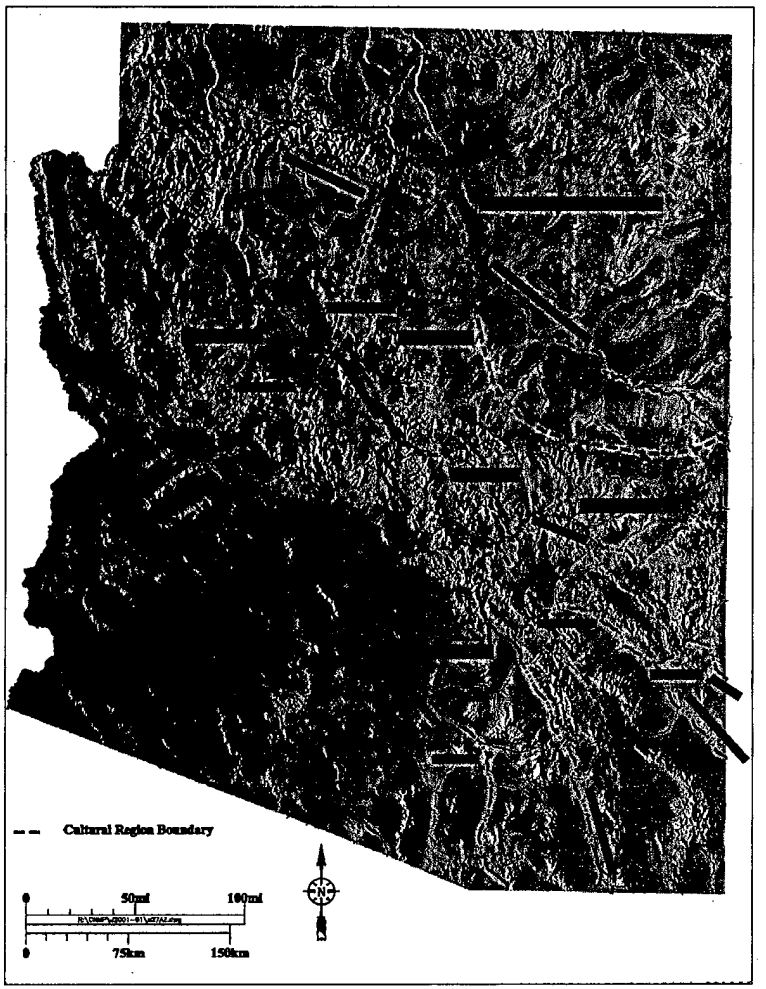


## PREHISTORIC PUEBLO WATER MANAGEMENT

Prehistoric Puebloan peoples began building small masonry pueblos in the A.D. 800s. By the late A.D. 1100s people were moving into large sites, many of which were cliff dwellings. The ability to produce greater amounts of food brought about increases in populations and the need to grow even more food. The late Prehistoric Puebloan Kayenta peoples of northeastern Arizona, who lived in cliff dwellings like Betatakin and Kiet Siel in Tsegi Canyon between A.D. 1250 and 1300, practiced dry farming and floodwater farming. Dry farming can be practiced only in areas where there is sufficient rainfall, as crops are solely dependent on rainfall for moisture. Like modern and historic Hopi farmers, the Kayenta farmers also practiced sand dune farming, a form of dry farming.

The Kayenta also practiced floodwater farming, planting fields in floodplains so that they could be inundated with over-the-bank floodwaters. This was somewhat risky, in that extensive high-water flooding could wipe out the fields. These farmers also diverted water to fields by using ditches and diversion features such as stone check dams or weirs made from local vegetation.

There is some evidence of irrigation agriculture, but the use of canals does not appear to have been highly developed in this region.




Prehistorically, Arizona was the homeland of several early Native American cultures. Perhaps the most studied of these is the Hohokam culture of central and southern Arizona. The Hohokam are known as the desert people, and they successfully lived in the Sonoran Desert for a thousand years. The Hohokam were superb craftsmen and built a series of canals that transported water for hundreds of kilometers. The Prehistoric Puebloans (Anasazi) of northeastern Arizona formed the Kayenta branch of this pueblo-and-cliff-dwelling culture noted for its black-on-white pottery. The southeastern part of Arizona was occupied by the Mogollon, the mountain people. Late in Mogollon prehistory, they built some of the largest pueblos found in Arizona's archaeological record. The Sinagua culture developed in a small area of central Arizona, extending from the area around Flagstaff south into the Verde Valley. Their culture is a mixture of Hohokam, Prehistoric Puebloan, and Mogollon influences. The Patayan culture of the Colorado River valley and western Arizona included two branches, the Cerbat and Cohonina. It has not been extensively investigated. The term Salado refers to a pottery tradition that arose in central Arizona and spread widely throughout the Southwest in the late A.D. 1300s.



A modern Hopi sand dune (dry farming) field. Corn is planted in rows between windbreaks. The crops are dependent on rainfall for survival. Such fields can only be used for several years because the nutrients in the soil are quickly depleted by the agricultural crops. Photograph courtesy of Michael Foster.

Kayenta peoples also built reservoirs to capture and store water. They would often modify a natural depression by building a stone wall across one end of the feature to keep water from flowing out. The water was used for drinking and pot irrigation–the filling of ceramic vessels with water and taking it to the gardens to water the plants.

Another feature commonly found in the Prehistoric Pueblo area is the check dam. These are found in many areas across Arizona. However, in northern Arizona they tend to be larger. Check dams are rock walls several courses high and sometimes several courses thick. They are placed across drainages to slow the flow of water during times of flooding. These drainages are ephemeral, that is, they normally flow only during rainfall and